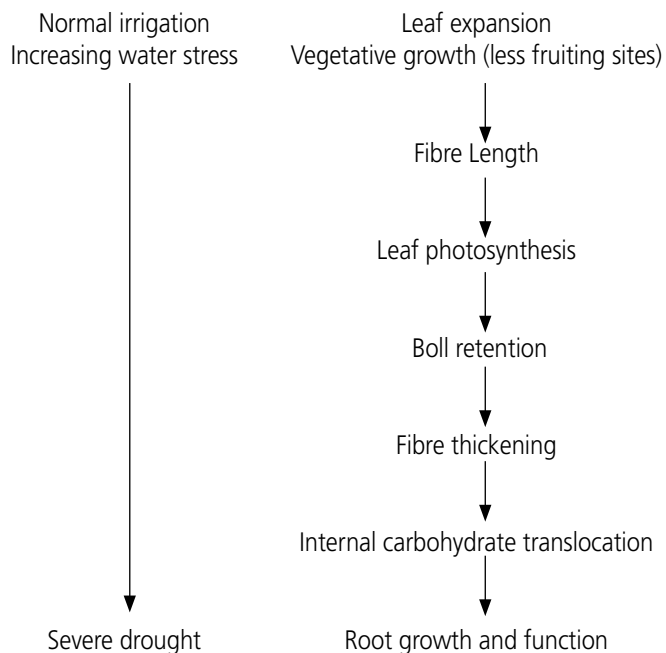


commonly associated with short fibre. As fibre elongation occurs over approximately 20 days it only takes very small changes in conditions to make large changes in the fibre length.

The diagram below shows the impact of increasing water stress on plant growth. Fibre length is the first characteristic affected in response to stress.

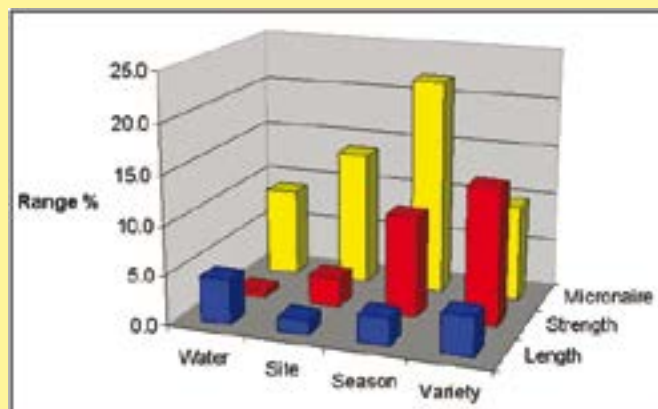
**The sequence by which plant growth is reduced in response to increasing water stress.**

(Cotton Production During Drought, Cotton CRC)



While managing the crop for length it is important to consider the other fibre characteristics including strength and micronaire. Figure 4 shows the sources of variability of fibre length, strength and micronaire. This data shows that micronaire has varied most across seasons, that strength has varied most by variety and that fibre length has varied most by crop water regime.

**FIGURE 4: Variability of fibre characteristics**



(G. Constable)

For further information in relation to any of the topics mentioned in this article, please contact your local CSD Extension and Development Agronomist or visit the CSD website. Canopy temperature sensors are being installed now and can be seen at [http://csd.net.au/soil\\_temperatures](http://csd.net.au/soil_temperatures)

General guide only, not comprehensive or specific technical advice. Circumstances vary from farm to farm. To the fullest extent permitted by law, CSD expressly disclaims all liability for any loss or damage arising from reliance upon any information, statement or opinion in this presentation or from any errors or omissions in this document.

## Custom fabrication

As farmers would know, it is no longer feasible to have tractors setup to do the one job only. They need to be capable of performing a wide range of tasks and often the original equipment wheels and tyres are not suitable for every farmer's needs.

This is where Titan Australia's ability to custom manufacture a wheel and tyre package to suit individual needs can lead to improved efficiencies and save farmers time and money. Titan have an engineering team that is dedicated to working with its customers to find solutions that best suit their needs. Whether that be moving to wider flotation tyres to reduce soil compaction, an LSW (low sidewall) option, or to dual wheels with custom made spacers to achieve specific required tyre trackings.

Titan have successfully manufactured and supplied many custom designed dual wheel/tyre and spacer sets to suit individual farmers' needs including a recent set of 50 inch wheels/tyres for a Claas Xerion 500. This particular setup gave the farmer the option of using a short and long spacer to achieve a two and four metre tyre track setting. The farmer then has the option of removing the long spacer to bring the wheel/tyres into a more standard dual tyre spacing. It gives the farmer more options and uses for his tractor and the narrow setting option is also ideal for transporting.

Titan have also manufactured many custom offset wheels and different length spacers to achieve the very common three metre tyre tracking for broadacre farming. They can manufacture adjustable wheel options for row crop farmers and also have an extensive range of both Australian made and imported agricultural axles as well as offer suspension systems and solutions to suit individual needs.

Farmers know what they need and there is no reason for them to put up with an original equipment setup that doesn't achieve these needs. Custom fabrication options are available and are the way to go.

To find a solution to your individual farming needs contact Titan Australia on 1300 791 672 or email [sales@titanaustralia.com](mailto:sales@titanaustralia.com)



## New cotton wound dressing

**A** NEW, nonwoven cotton gauze that quickly stanches bleeding and promotes wound healing is now commercially available, thanks to the efforts of a multidisciplinary team that includes scientists with USDA's Agricultural Research Service (ARS) in New Orleans, Louisiana.

H&H Medical Corporation, a Williamsburg, Virginia, firm specialising in trauma care products, rolled out the new gauze under the tradename 'TACgauze.' The product differs from standard gauzes in that it's made of greige (pronounce 'gray') cotton fibre – that which hasn't been scoured and bleached prior to fabrication, notes Vince Edwards, a textile chemist with ARS' Southern Regional Research Center in New Orleans.

In studies there, Edwards identified the role of the cotton fibre's outer cuticle in stimulating the body's production of fibrin and other blood-clotting agents. To do this, he adapted the use of a micro-scale technique (thromboelastography) employed in hospitals to assess patient clotting profiles. Virginia Commonwealth University (VCU) collaborators assessed the clotting properties of fabric made from the fibres using animal models. The findings showed that when made into a gauze used to wrap or pack wounds, greige fibre performed as well as standard cotton gauze dressings.

In trials, the nonwoven greige cotton gauze was 33 per cent lighter and 63 per cent more absorbent than standard crinkle-type gauzes made of bleached processed cotton. During the trials, the nonwoven greige cotton gauze also triggered blood clotting more quickly, shed fewer fibres and released small amounts of hydrogen peroxide, thought to help mobilise wound-healing cells at the injury site.

According to BleedingControl.org, uncontrolled bleeding (hemorrhaging) is the number one cause of preventable death in persons who experience traumatic injury. This can happen within five minutes if hemorrhaging from the wound site isn't slowed or stopped, a state known as 'hemostasis.'

In developing TACgauze together with the ARS-VCU team and T.J. Beall Company of Greenwood, Mississippi, H&H sought a hemostatic gauze that was easy to carry and use, affordable, reliable, sterile, long-lasting and effective under wide-ranging circumstances – whether that be on the battlefield, accident scenes, mass-casualty events or remote locations.

Interest in evaluating TACgauze has come from both the military and civilian sectors, including the US Marine Corps, according to H&H President Paul Harder.

**The Agricultural Research Service is the US Department of Agriculture's chief scientific in-house research agency.**



## New Internet of Things network

**G** OANNA Ag has announced the roll-out of a publicly available LoRaWAN Internet of Things (IoT) network supported by the National Narrowband Network Co (NNNCo), to bring smarter irrigation management solutions to Australian cotton growers.

The network, an extension of NNNCo's existing network coverage, covers an area of some three million hectares, stretching across the Murrumbidgee, Lachlan, Gwydir, MacIntyre, Namoi and Macquarie valleys, and will continue to be expanded throughout 2019.

Goanna Ag recently secured funding from prominent investors including Westpac and Graincorp Operations. The company will use the network to bring low-cost connected sensors and data analytics to growers, combining soil moisture data via installed probes, local weather data and satellite imagery to optimise irrigation scheduling.

Alicia Garden, CEO of Goanna Ag, said "Every day that a cotton crop is under stress can cost a grower over \$100 per hectare. We help growers schedule and apply just the right amount of water to use on crops at just the right time so they can optimise their performance and profit.

"Connectivity has always been an issue for regional and rural areas due to lack of coverage and the relatively high cost of connection," she added.

"LoRaWAN networks have proved ideal for agriculture here and overseas because of the low cost of sending small amounts of essential data using very low power."

Goanna Ag is deploying their first 100 gateways in NSW and Queensland, along with over 2000 sensors across cotton farms. These sensors include soil moisture probes, rain gauges, weather stations, and water and fuel tank monitors amongst a host of others.

"LoRaWAN is a global open standard technology and there's a huge growing market of sensors for agriculture," Alicia added. "The idea is not to lock growers in but to help the industry adopt the technology quickly and easily for the benefit of everyone.

"Any compliant LoRaWAN sensor will be able to connect to the network, with Goanna Ag providing sensors where needed and analytics as part of its GoField and GoSense services."

NNNCo is an Australian carrier providing a highly secure, enterprise/carrier grade service leveraging LoRaWAN technology. The company is delivering a nationwide network and end-to-end platform to enable solutions for agriculture, business and government.

Rob Zagarella, NNNCo founder and CEO, said the extension of its network would help to solve connectivity and affordability problems for farmers.

"The network will significantly drive down the cost of connection for data communication and the cost of sensors using this technology. This will make the difference between isolated usage and widespread deployment of the sensors which will in turn provide more granular information and higher value to the industry," Rob said.

## Dryland cotton hectares up in 2019 season

**A**LMOST 93,000 hectares of dryland cotton was planted this season, which at 31.5 per cent, is the highest ever as a percentage of total cotton crop. This year's dryland crop is also the second biggest since commercial production began in the 1960s, with only the 2011–12 season recording a larger area.

More than half of the dryland cotton was planted on the Darling Downs and in the Gwydir valley after rainfall events in October and November.

This season's dryland cotton has boosted total cotton area from ABARES' predicted figure of 250,000 to 294,000 hectares.

Commercial Operations Lead for Bayer, Tony May, said while the large dryland cotton area being grown this season was exceptional, the overall size of the cotton industry is down significantly on last year.

"There are nearly 160,000 hectares less cotton compared with last season," Tony said. "This is a direct result of low or zero allocations of irrigation water because of the extended drought.

"We had very dry conditions for the first eight months of 2018 and low soil moisture levels coming into the planting season, so it's remarkable to see how much dryland cotton has been planted," he said.

One of the benefits of the expanded planting window of Bollgard 3 cotton is that growers can plant from August 1 to December 31.

"The large dryland cotton area this season certainly reflects the value farmers place on the flexibility of Bollgard 3, which allows them to delay their planting decision until they have adequate soil moisture levels," Tony said.

Once again more than 95 per cent of the cotton area was planted to Bollgard 3 stacked with Roundup Ready Flex cotton, which contains in-built technologies that allow growers to effectively control Helicoverpa caterpillars as well as keep their crops clean of weeds.

"The widespread adoption of Bollgard 3 cotton over the past three seasons has led to a further reduction in insecticide use compared to the previous technology Bollgard II; and is now 93 per cent lower across the industry than when conventional cotton was grown in the early 1990s."

Tony said that growers also value the benefits of Roundup Ready Flex technology in cotton.

"We've received a lot of positive feedback from dryland cotton growers who say they are now able to get on top of problem weeds that had been building up in other summer crops." This season, more than 70 growers entered the industry for the first time, half of whom are growing dryland cotton.

"The high proportion of new dryland growers not only demonstrates the value and flexibility of Bollgard 3 stacked with Roundup Ready Flex cotton but also the higher potential returns, driven by the technology and the strong cotton price," Tony said.

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They stock a range of China Pumps in the HBC and HW series, along with pump inserts, impellers, suction shrouds and flapper valves. Along with these they also carry several PTOs and associated equipment. Waterneeds also supply a very large range of proven genuine Cummins engines, but these are manufactured to order. They can and previously have, supplied the complete pump package – genuine Cummins engine, transmission and drive shaft.

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# Rural women ready to shine after graduating from leadership course

**S**IXTY-FIVE women from rural New South Wales say they're ready to make a difference in their communities after graduating from a new leadership and professional development course for the cotton and grains industries.

The Generating Regionally Outstanding Women (GROW) course is a professional development and leadership program for regional women. It works to boost the participants' leadership, management, communication, and networking skills, as well as provide tools to improve Work Health and Safety and staff management in their businesses.

The course is provided by Tocal College and funded through the AgSkilled program, a training initiative of the New South Wales Government, led by industry partners the Grains Research and Development Corporation (GRDC) and Cotton Australia.

A total of 104 participants completed the GROW program this year, and 65 of those women attended a graduation ceremony in Sydney to celebrate their achievements.

"This course is all about empowering regional women to use their leadership skills to generate positive change in their businesses and communities," GROW program manager Rebecca Fing says.

"By focusing on building leadership and business skills in this program, we're fostering a belief that meaningful change is possible and that our regional businesses and communities can flourish when women stand up and let their skills shine.

"While many regional communities don't have the breadth of resources metropolitan communities do, we believe having strong rural businesses can have a huge impact in building resilience and strength in our towns. That's why workplace health and safety and human resource management is the other key focus of this program – strong businesses build strong communities."

Beth Shakeshaft participated in the GROW program at Parkes and says it was a valuable experience.

"This was honestly the best training course I have ever done," Beth says.

"All the information and activities were very relevant and gave me a wonderful insight into my clients' and friends' farms and businesses.

"I feel like a more valuable person because of this course."

AgSkilled project officer Claudia Vicary says GROW is an important program for agriculture in NSW.

"The cotton and grains industries are committed to building diverse skillsets, strong businesses and healthy communities; through AgSkilled, that goal is being realised," Claudia says.

"The GROW program has been a huge success this year, and by having an army of positive, empowered and passionate rural women ready to use their skills and lead from the front, our regional communities and farm businesses will continue to go from strength to strength.

"The women that participated all have fascinating stories and outlooks on how we can build a stronger regional Australia, and I'm excited to see where these women end up. Likewise, I can't wait to meet another group of passionate women when the GROW program runs again next year."



Beth Shakeshaft received her graduation certificate.



65 women attended the GROW graduation ceremony.



GROW project manager Rebecca Fing.